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semicircle is found in a line drawn through it perpendicular to ab, the axis about which the semicircle revolves, kh drawn perpendicular to ab intersects oe at h and gives one point of the ellipse ; and therefore one extremity of the diameter lh.

II. **Solution by H. C. WHITAKER, A. M., Ph. D., Professor of Mathematics, Manual Training School, Philadelphia, Pennsylvania; W. H. CARTER, Professor of Mathematics, Centenary College of Louisiana, Jackson, Louisiana ; and J. O. MAHONEY, B. E., Assistant in Mathematics, Vanderbuilt University, Nashville, Tennessee.**

If we denote ab by a, cd by b and tangent α by m, we have the equations

$$\frac{x^2}{a^2}+\frac{y^2}{b^2}=1 \text{ and } y=mx \text{ which intersect at}$$

$$\left(\frac{ab}{\sqrt{b^2+a^2m^2}},\ \frac{abm}{\sqrt{b^2+a^2m^2}}\right) \text{ and } \left(-\frac{ab}{\sqrt{b^2+a^2m^2}},\ -\frac{abm}{\sqrt{b^2+a^2m^2}}\right),$$

the distance between these points being equal to

$$2ab\sqrt{\frac{1+m^2}{b^2+a^2m^2}}.$$

Also solved by *G. B. M. ZERR*, *J. SCHEFFER*, and *WILLIAM HOOVER*.

PROBLEMS.

60. **Proposed by WILLIAM HOOVER, A. M., Ph. D., Professor of Mathematics and Astronomy, Onio University, Athens, Ohio.**

Prove that the loci of the foci of the variable ellipses form a pair of circles passing through the extremities of the major axis of the fixed ellipse and having for diameters the semi-latasrectum of the fixed ellipse.

61. **Proposed by WILLIAM E. HEAL, Member of the London Mathematical Society, and Treasurer of Grant County, Marion, Indiana.**

Let the bisectors of the angles A, B, C of a triangle intersect in O and meet the sides opposite A, B, C in A', B', C'. Prove that the perpendiculars form O on the sides of the triangle $A'B'C'$ are $p_1=\frac{rR}{d_1}$, $p_2=\frac{rR}{d_2}$, $p_3=\frac{rR}{d_3}$ where r, R are the radii of the inscribed and circumscribed circles of the triangle ABC and d_1, d_2, d_3 are the distances of the center of the circumscribed circle from the centers of the three escribed circles.

62. **Proposed by F. P. MATZ, D. Sc., Ph. D., Professor of Mathematics and Astronomy in Irving College, Mechanicsburg, Pennsylvania.**

Prove that two triangles are equal if they have two sides and *the median of one of them* equal, each to each.